UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,763	02/11/2004	David J. Freger	6743-0003-1	3453

7590 11/04/2005

McCormick, Paulding & Huber LLP
CityPlace II
185 Asylum Street
Hartford, CT 06103-3402

EXAMINER	
LAU, TUNG S	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/776,763	FREGER ET AL.	
	Examiner	Art Unit	
	Tung S. Lau	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,12-14,17-20 and 22-25* is/are rejected.

7)☒ Claim(s) *2,10,11,15,16 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-9, 12-14, 17-20 and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Holzrichter et al. (U.S. Patent 6,738,044).

Regarding claim 19:

Holzrichter discloses an apparatus for distance measurement comprising means for generating and sending a pattern of send pulses toward a target (Col. 5, Lines 20-39); means for receiving a pattern of received pulses reflected at the target (Col. 5, Lines 20-39); means for computing and controlling that receive, process, transfer and exchange information between the parts of said apparatus and between said apparatus and the environment (Col. 5, Lines 20-39), and means for modulating said sent pulses to minimize the effect of disturbance during measuring process (Col. 41, Lines 5-22, Col. 8-10, Lines 66-10).

Regarding claim 25:

Holzrichter discloses an apparatus for distance measurement comprising: means for generating and sending a pattern of send pulses toward a target (Col. 5, Lines

20-39); means for receiving a pattern of received pulses reflected at the target (Col. 5, Lines 20-39); means for computing and controlling that receive process (Col. 5, Lines 20-39), transfer and exchange information between the parts of said apparatus and between said apparatus and the environment (Col. 5, Lines 20-39), and means for evaluating observability of pulse transit time through analysis of patterns of said sent and received pulses (Col. 41, Lines 5-22, Col. 8-10, Lines 66-10).

Regarding claim 1:

Holzrichter discloses a pulse transit time-based method for distance measurement comprising the steps of setting initial components for a vector of parameters defining modulation of sent uses (Col. 8-10, Lines 66-10); emitting a pattern of said sent pulses toward a target according to said vector of parameters (fig. 1, unit 14, 13), receiving a pattern of received pulses reflected from the target evaluating observability of pulse transit time through analysis of patterns of said sent and received pulses (fig. 22, unit 225); obtaining a pulse transit time measurement through the analysis of said patterns of said sent and received pulses if said observability evaluation is satisfactory (Col. 8-10, Lines 66-10, Col. 24, Lines 51-55, Col. 4, Lines 21-25); calculating sought distance by taking said pulse transit time measurement as an input if said evaluation is satisfactory (Col. 8-10, Lines 66-10, Col. 24, Lines 51-55); performing a correction on the components of said vector of parameters of modulation of said sent pulses if said observability evaluation is not satisfactory (Col. 8-10, Lines 66-10), returning to

said emitting a pattern of modulated pulses step of said method thereby providing an effective protection against disturbances that affect the process of measurement (Col. 8-10, Lines 66-10).

Regarding claim 20, Holzrichter discloses computing means include a plurality of hardware and software elements meant for the implementation of functions of analyzing the process of distance measurement (fig. 22, unit 225, 226), altering said sent pulses modulation and controlling the process of distance measurement in accordance with said method for distance measurement and; said function of analyzing the process of distance measurement is attributed to analyzer-unit of said computing means (Col. 8-10, Lines 66-10) and; said function of altering said sent pulses modulation is attributed to Corrector-unit of said computing means (Col. 8-10, Lines 66-10) and; said function of controlling the process of distance measurement in accordance with said method for distance measurement is attributed to Controller-unit of said computing means (Col. 8-10, Lines 66-10); Regarding claim 22, Holzrichter discloses said means for receiving said pattern of pulses reflected at the target are comprised of a plurality of functional elements including Receiver and Amplifier (fig. 4, unit 59, 64, and; Receiver receives said pattern of echo pulses and sends said pattern of echo pulses for an amplification through said Receiver's output connected to the input of said Amplifier and; Amplifier whose output is connected to the analog input of the Analyzer unit of said computing and controlling means (fig. 4, unit 72,

71, provides initial echo-signal processing that includes at least the amplification of said pattern of received pulses (fig. 4, unit 59, 64; Regarding claim 23, Holzrichter discloses said Analyzer whose analog input is connected to said output of Amplifier (fig. 4, unit 59), performs computing operations that include but not limited to (a) creating a relation of characteristic values derived from said patterns of send and received pulses (fig. 4, unit 72), (b) comparing pairs of variables in said relation and identifying the true pulse transit time measurement (fig. 4, unit 71), c) evaluating said observability of said pulse transit time variable and; said Corrector whose digital input bus is connected to Analyzer's digital output bus and whose digital output bus is connected to Controller's digital input bus, performs computing operations that include but not limited to calculating corrections of said emitted pulses modulating parameters based on the result of said pulse transit time observability evaluation provided by Analyzer (Col. 8-10, Lines 66-10), and generating a vector of parameters that identify the modulation of said emitted pulses, and delivering said vector of modulating parameters to Controller through said Corrector's output digital bus and; said Controller whose digital input bus receives said vector of corrected modulating parameters from said Corrector that sends said enabling signal to said Former and whose digital output bus sends to said Former said vector of driving signals with a mask of said modulating parameters and whose global output contains the sought distance performs computing operations that include but not limited to generating said vector of driving signals controlling said sent pulses modulation, calculating said

sought distance based on said pulse transit time measurement and interfacing the measured distance out for further utilization (Col. 8-10, Lines 66-10).

Regarding claim 24, Holzrichter discloses any digital input bus or digital output bus allows its hardware or software or combined hardware and software implementation (fig. 24, unit 411, fig. 2) and; said bus represents a functionality of vectorial data communication within said computing and controlling means and other functional units of said apparatus (Col. 5, Lines 20-39).

Regarding claim 3, Holzrichter discloses having said pulse transit time observability evaluated, further including forming a first vector of characteristic variables that are associated with said pattern of sent pulses and defined by current values of said vector of parameters of sent pulses (Col. 5, Lines 20-39); forming a second vector of said characteristic variables that are associated with said pattern of received pulses and defined by current values of said vector of parameters of sent pulses (Col. 5, Lines 20-39, fig. 4, unit 54); creating a relation of characteristic variables that are the components of said first and said second vectors of characteristic variables (Col. 5, Lines 20-39, fig. 4, unit 54); evaluating the observability of said pulse transit time through the analysis of functional dependencies in said relation (Col. 5, Lines 20-39, fig. 4, unit 54); generating an indicator Variabie showing if said pulse transit time observability is satisfactory or not satisfactory (Col. 8-10, Lines 66-10); Regarding claim 4, Holzrichter discloses said indicator of pulse transit time observability is equal to the number of functionally dependent pairs in said relation of characteristic variables' that are

derived from said patterns of sent and received pulses and are presented as the components of said first and second vectors (fig. 4, unit 54, 72, 71);); Regarding claim 5, Holzrichter discloses evaluating said pulse transit time observability by comparing said indicator of transit time observability with a positive reference value such that if said indicator of observability is greater or equal to said reference value, then said pulse transit time observability is considered satisfactory; otherwise, said observability is considered unsatisfactory (fig. 2, unit 33); Regarding claim 6, Holzrichter discloses predicting the direction of change in the forthcoming value of said observability indicator with respect to said observability indicator's reference value such that if said indicator of observability is predicted greater or equal to said reference value (fig. 2, unit 33, 34), then said pulse transit time observability is considered satisfactory in the next measuring cycle; othemise, said observability is considered unsatisfactory in the next measuring cycle (fig. 2, unit 33, 34); Regarding claims 7, 12, Holzrichter discloses forecasting or non forecasting technique (fig. 22, unit 225); Regarding claim 8, Holzrichter discloses pulse capturing derived from patterns if satisfactory (fig. 2, unit 33, 34); Regarding claim 9, Holzrichter discloses said characteristic variables of the patterns of sent and received pulses may include but not limited to the components of said first and said second vectors of characteristic variables and; said characteristic variables of the patterns of sent and received pulses possess the property of low sensibility to disturbances affecting the process of measurement (Col. 8-9, Lines 66-49); Regarding claim 13, Holzrichter discloses

in one method's embodiment the true pulse transit time measurement is distinguished from the false pulse transit time measurement by requiring that in any measuring cycle the number of emitted pulse must be greater or equal to the number of received echo pulse bust and; in another method's embodiment the true pulse transit time measurement is distinguished from the false pulse transit time measurement by requiring that in any measuring cycle the number of emitted pulse bursts is equal to the number of received echo pulse bursts and the sampling time for collecting the echo-pulse bursts is in the neighborhood of the sent pulse-code time that includes the predetermined number of consequent pulse bursts (fig. 4, unit 52); Regarding claim 14, Holzrichter discloses in another method's embodiment the single pulse-burst's duration and the single pulse burst's duty factor are ms such that a fusion of separate echo-pulses occurs producing a single, continuous within its duration, pattern and (fig. 4, unit 52); the true pulse transit time measurement is distinguished from the false pulse transit time measurement by requiring that in any measuring cycle the number of extreme values present on said echo pattern's envelope is in a relation to said number of pulse bursts existing in said pattern of sent pulses and the time distance between the two consequent likewise extreme values existing on said pattern of received pulses is within a neighborhood of the period of the corresponding pulse burst on said pattern of sent pulses (fig. 4, unit 52); Regarding claim 18, Holzrichter discloses altering at least one component of sent pulses (fig. 4, unit 54); Regarding claim 17, Holzrichter discloses in one method's

embodiment, a value of at least one minimum of said pattern of received pulses is used for distinguishing said true pulse transit time measurement from said false pulse transit time measurements, whereby providing protection against possible saturation of said pattern of echo pulses (Col. 8-9, Lines 66-60).

Allowable Subject Matter

2. Claims 2, 10, 11, 15, 16 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitation of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: prior art fail to teach regarding claim 2, the physical origin of said pulses is application-dependent including but not limited to acoustic, electromagnetic and light waveforms; Regarding claim 10, second vector of characteristic variables includes among the coordinates of said vector a timestamp associated with the time instance when the carrier frequency changes; Regarding claim 11, blocking in the next measuring cycle the pulse transit time data collection from those segments on said pattern of received pulses that have been predicted being disturbed in the next measuring cycle; Regarding claim 15, fused continuous on its period echo-pattern is achieved by requiring that said single pulse's period and a gap between the two consequent pulses are smaller than the sum of a pulse emitting unit transient time and a processing hardware transient time; Regarding claim 16, said characteristic variables could be comprised of adjacent extreme values existing on said pattern of received pulses or could be comprised

of extreme values that are not adjacent in their position on said pattern of received pulses; Regarding claim 21, Former, whose enable input is connected to said Controller's initiating output, and whose digital input bus is connected to said Controller's digital output bus, and whose control output bus is connected to the driving point bus of said Driver, converts said Controller's vector of pulse modulating driving signals into said driver's control output bus and.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

3. Applicant's arguments filed 10/27/2005 with respect to the amended claims have been fully considered, but they are not persuasive.

A. Applicant argues in the arguments that the prior art does not show 'the pulse train including observability evaluation is satisfactory'. Holzrichter discloses 'the pulse train including observability evaluation is satisfactory' in Col. 8-10, Lines 66-10, Col. 24, Lines 51-55, Col. 4, Lines 21-25, specifically in Col. 24, Lines 51-55; Holzrichter talks about the calculation he uses is to 'convert it into acceptable and satisfactory accurate data for computer display',in Col. 4, Lines 21-25. To anticipate a claim, the reference must teach every element of the claim, A claim

is anticipated only if each and every elements as set forth in the claim is found, either expressly or inherently, in a single prior art reference, See Verdegaal Bros. V. union Oil Co. of California, 814F2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Holzrichter talks about his invention is more accurate than the prior art, as the evidence shown, Holzrichter expressly teaches his invention is to increase accuracy to a satisfactory result and to display it on the measuring system.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL

BRYAN BUI
PRIMARY EXAMINER